

WHAT IS CLAIMED IS:

1. A method for producing an electrophotographic photosensitive member including layers each constituted by a non-single crystal material, comprising the steps of:
  - placing a substrate having a conductive surface in a film forming apparatus capable of being airtight-sealed under vacuum comprising evacuating means and raw material gas supplying means, and
  - 10 decomposing at least a raw material gas by a high frequency power to form a first layer constituted by at least a non-single crystal material on the substrate as a first step;
  - exposing the substrate with the first layer
  - 15 formed thereon to a gas containing oxygen and water vapor as a second step; and
  - decomposing at least a raw material gas by a high frequency power in said film forming apparatus to form on the first layer a second layer including
  - 20 an upper blocking layer constituted by a non-single crystal material as a third step.
2. The method according to claim 1, wherein said gas containing oxygen and water vapor is
- 25 atmospheric air.

3. The method according to claim 2, wherein in

said second step, the substrate with said first layer formed thereon is temporarily taken out from said film forming apparatus and thereby exposed to atmospheric air.

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4. The method according to claim 1, wherein said first layer is constituted by a non-single crystal material having at least silicon atoms as a base material and containing hydrogen atoms and/or a  
10 halogen.

5. The method according to claim 1, wherein the step of forming said first layer include forming at least a photoconductive layer and a silicon carbide  
15 layer.

6. The method according to claim 5, wherein an element of Group 13 or Group 15 of the periodic table is incorporated in said silicon carbide layer.

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7. The method according to claim 6, wherein the content of said element of Group 13 or Group 15 of the periodic table is from 100 atomic ppm to 30,000 atomic ppm.

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8. The method according to claim 1, wherein said upper blocking layer is constituted by a non-

single crystal material having at least silicon atoms as a base material and containing at least one of carbon, oxygen and nitrogen atoms.

5           9. The method according to claim 8, wherein said upper blocking layer is constituted by a non-single crystal material further containing impurity atoms for controlling a conductivity.

10           10. The method according to claim 9, wherein said impurity atom contained in said upper blocking layer for controlling a conductivity is an element of Group 13 or Group 15 of the periodic table.

15           11. The method according to claim 10, wherein the content of said element of Group 13 or Group 15 of the periodic table contained in said upper blocking layer is from 100 atomic ppm to 30,000 atomic ppm.

20           12. The method according to claim 1, wherein said upper blocking layer is formed so that the thickness of said upper blocking layer  $10^{-4}$  times or more as large as the largest one of spherical  
25 protrusions existing on the surface of said electrophotographic photosensitive member with the second layer formed thereon and equal to or less than

1  $\mu\text{m}$ .

13. The method according to claim 1, wherein  
said third step includes a step of further forming a  
5 surface layer on said upper blocking layer.

14. The method according to claim 13, wherein  
said surface layer is constituted by a non-single  
crystal material having at least silicon atoms as a  
10 base material and further containing at least one of  
carbon, oxygen and nitrogen atoms.

15. The method according to claim 13, wherein  
said surface layer is constituted by a non-single  
15 crystal material having carbon atoms as a base  
material.

16. The method according to claim 15, wherein  
the substrate temperature when said surface layer is  
20 formed is lower than the substrate temperature when  
said upper blocking layer is formed.

17. The method according to claim 1, wherein  
said second step further includes a step of  
25 processing the surface of said first layer.

18. The method according to claim 17, wherein

the step of processing the surface of said first layer is a step of removing at least head portions of protrusions existing on the surface of the first layer formed in said first step.

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19. The method according to claim 17, wherein the step of processing the surface of said first layer is a step of carrying out polishing processing.

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20. The method according to claim 19, wherein said polishing processing is polishing protrusions on the surface of said first layer formed in said first step to flatten the surface.

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21. The method according to claim 19, wherein said polishing processing is performed by abutting a polishing tape against the surface of said first layer formed in said first step using an elastic rubber roller, and providing a relative difference between the traveling speed of the surface of said first layer made to travel with said substrate and the rotation speed of the elastic rubber roller abutting said polishing tape against the surface of said first layer.

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22. The method according to claim 17, wherein the step of processing the surface of said first

layer is performed so that the arithmetic average roughness (Ra) measured in the visual field of  $10\text{ }\mu\text{m}$   $\times$   $10\text{ }\mu\text{m}$  is 25 nm or less.

5           23. The method according to claim 1, wherein said second step further includes a step of inspecting the photosensitive member with said first layer formed thereon.

10           24. The method according to claim 1, wherein in said second step, the surface of said first layer is made to contact water to wash the same before proceeding to said third step.

15           25. An electrophotographic photosensitive member produced by the production method according to claim 1.

20           26. An electrophotographic apparatus using the electrophotographic photosensitive member of claim 25.

27. An electrophotographic photosensitive member comprising:

25           a cylindrical substrate having a conductive surface;

            a first layer comprising a photoconductive layer; and

a second layer comprising an upper blocking layer formed of non-single crystal material composed chiefly of silicon atoms and containing an element belonging to Group 13 or Group 15 of the periodic  
5 table;

said first layer being a layer from which head portions of spherical protrusions existing on the surface of the first layer have been removed.

10 28. The electrophotographic photosensitive member according to claim 27, wherein said upper blocking layer is in a thickness of at least  $10^{-4}$  time the diameter of the largest spherical protrusion among protrusions present at the surface of said  
15 first layer, and in a thickness of 1  $\mu\text{m}$  or less.

29. The electrophotographic photosensitive member according to claim 27, wherein said first layer comprises lower blocking layer formed on non-  
20 single crystal material composed chiefly of silicon atoms and containing an element belonging to Group 13 or Group 15 of the periodic table.

30. The electrophotographic photosensitive  
25 member according to claim 27, wherein said second layer comprises a surface layer formed of non-single crystal silicon carbide or a surface layer formed of non-single crystal carbon.